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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,749	12/30/2003	Wonju Cho	2013P148	9060

8791 7590 05/25/2005

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EXAMINER

DANG, PHUC T

ART UNIT PAPER NUMBER

2818

DATE MAILED: 05/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

8m

Office Action Summary	Application No.	Applicant(s)	
	10/749,749	CHO ET AL.	
	Examiner	Art Unit	
	PHUC T. DANG	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on election filed April 18, 2005.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-15 is/are pending in the application.

4a) Of the above claim(s) 9-15 is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-8 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 30 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some * c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>123003 & 041805</u> .	6) <input type="checkbox"/> Other: _____

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DETAILED ACTION

Restriction/election

1. Applicant's election without traverse of Group I (claims 1-8) filed on April 18, 2005, drawn to a metal-oxide-semiconductor field effect transistor (MOSFET) device and withdrawn Group II (claims 9-15).

Applicants have the right to file a divisional application covering the subject matter of the non-elected claims.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The office acknowledges receipt of the following items from the applicant:

Information Disclosure Statement (IDS) filed on December 30, 2003 and April 18, 2005.

Specification

4. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior

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art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levin in view of Yamaguchi et al., hereinafter "Yamaguchi" (U.S. Patent No. 5,231,038) in view of Fan et al., hereinafter "Fan" (U.S. Patent No. 6,455,376).

Regarding claim 1, Yamaguchi discloses a metal-oxide-semiconductor field effect transistor (MOSFET) device comprising:

- a channel region (10, Fig. 1H) formed on a monocrystalline silicon layer (43, Fig. 1H) of a silicon-on-insulator (SOI) substrate (41, Fig. 1);

- a source/drain region (49, 50, Fig. 1H) formed in the monocrystalline silicon layer (43, Fig. 1H);

- a first silicon oxide film pattern (44, Fig. 1H) formed on the monocrystalline silicon layer (43, Fig. H) to contact the deep junction region and doped with a first impurity of a first conductivity type at a first concentration. The deep junction region is obviously set into Yamaguchi's the source/drain region and is suggested below by Fan on Fig. 1C.

- a second silicon oxide film spacer (46, Fig. 1H) formed on the monocrystalline silicon layer to contact the shallow extension region and doped with a second impurity of the first conductivity type at a second concentration. The shallow extension region is obviously set into Yamaguchi's the source and drain region and is suggested below by Fan on Fig. 1C.

- a gate electrode (52, Fig. 1J) formed on the channel region (10, Fig. 1J) and having a T-shaped section (Fig. 1J); and

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a gate dielectric film (48, Fig. 1J) interposed between the channel region (10, Fig. 1J), and the gate electrode (52, Fig. 1J).

Yamaguchi discloses all the features of the claimed invention as discussed above, but does not disclose the source/drain region comprising a deep junction region and a shallow extension region.

Fan, however, discloses the source/drain region comprising a deep junction region (122, Fig. 1C) and a shallow extension region (114, Fig. 1C).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the teaching of Fan to Yamaguchi discussed above such that the source/drain region comprising a deep junction region and a shallow extension region for a purpose of improving the performance characteristics of the device.

Regarding claims 2-3, Yamaguchi discloses the second silicon oxide film spacer has an outer wall defining the length of the channel region and contacts a sidewall of the first silicon oxide film pattern as shown in Fig. 1E

Regarding claim 4, Yamaguchi discloses the gate electrode is formed on the first silicon oxide film pattern and the second silicon oxide film spacer as shown in Fig. 1J.

Regarding claim 8, Yamaguchi discloses the gate dielectric film is extended to between the first silicon oxide film pattern and the gate electrode and between the second silicon oxide film spacer and the gate electrode as shown in Fig. 1J.

6. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levin in view of Yamaguchi and Fan in view of Isobe et al., hereinafter "Isobe" (U.S. Patent No. 5,187,559).

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Yamaguchi discloses all the features of the claimed invention as discussed above, but does not disclose the first concentration is higher than the second concentration and the first impurity phosphorus (P) and the second impurity arsenic (As) are different from each other.

Isobe, however, discloses the first concentration is higher than the second concentration and the first impurity phosphorus (P) and the second impurity arsenic (As) are different from each other [col. 2, lines 38-64].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to modify the teaching of Yamaguchi by Isobe as discussed in claims 5-7 above for a purpose of improving the performance characteristics of the device.

Conclusion

7. Applicants are advised to cancel the non-elected claims of Group II (claims 9-15) in response to the next Office action if the application is considered to be allowed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and After Final communications.

10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

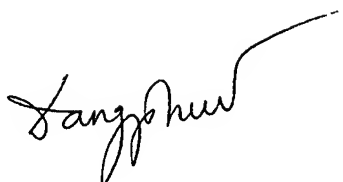
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Phuc T. Dang

Primary Examiner

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PD

A handwritten signature in black ink, appearing to read "Phuc T. Dang", with a long, sweeping horizontal line extending to the right.